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Green Crop Lifting – an Alternative Producing Healthy Seed Potatoes in the System of Organic Farming

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Introduction

The standards of organic farming require the use of organically grown seeds in organic potato farming. Presumably the use of conventionally grown seeds under exceptional circumstances will end in 2003. Only organically grown seeds can be used thereafter. Therefore, it is important to check alternatives for organic potato seed production, which will reduce the cultivation risk, guarantee a high quality of seed potatoes (virus-free and healthy seed), and increase the fraction of marketable potatoes.

Materials and methods

On 7 farms in Northern Germany (4 sites in the coastal region (Schleswig-Holstein) and 3 sites in the inland region (Lower Saxony)) the green crop lifting (GCL) at two different dates was checked against the traditional process (haulm cutting) and a control plot (natural senescence) with regard to the effect of presprouting in the years 1999 to 2001. The focus of the investigation was the amount of viral load (tested with ELISA) and detection of other diseases (valuation) on / in the harvested potatoes. Yield reduction and tuber damage was recorded. Flying activity of aphids was monitored by yellow water traps.

Results and discussion

In the coastal region a very low pressure of aphids was observed over the three years (Fig. 1). In contrast there was a higher pressure of aphids in the inland region, but only 1999 brought an early and outstanding pressure (Fig. 1). In peak times (middle of July 1999) the number of aphids was more than 12 times higher compared to the coastal region. Only in 2000 an early aphid pressure was recorded in the middle of May. If there was a high pressure of aphids the early green crop lifting (in the middle of July) was an effective way reducing the virus diseases (Fig 2).

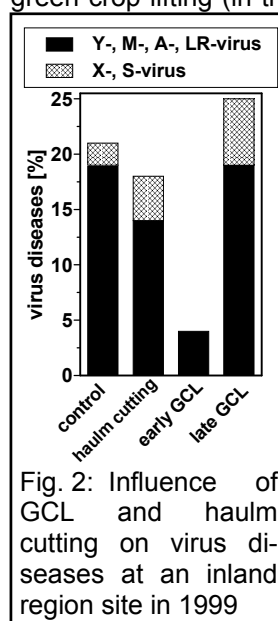


Fig. 2: Influence of GCL and haulm cutting on virus diseases at an inland region site in 1999

an effective way reducing the virus diseases (Fig 2).

Caused by the early date of GCL the total tuber yield reduction averaged out at 18,8 % over the three years compared to the control (Fig. 3). Related to the marketable seed potatoes (28-50 mm) the yield reduction amounted 14.1 % only.

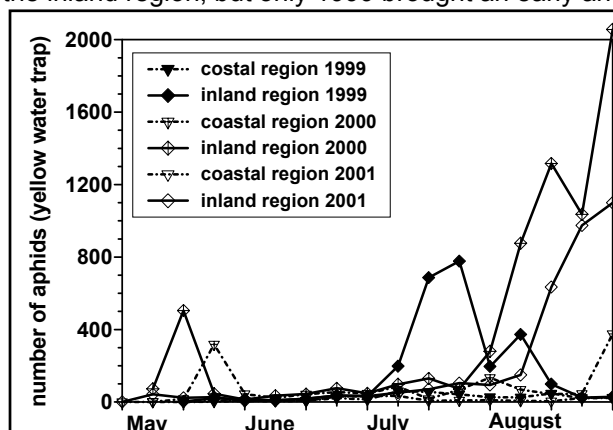


Fig. 1: Aphid occurrence in the inland region (lower Saxony) and the coastal region (Schleswig-Holstein) in the years 1999 to 2001

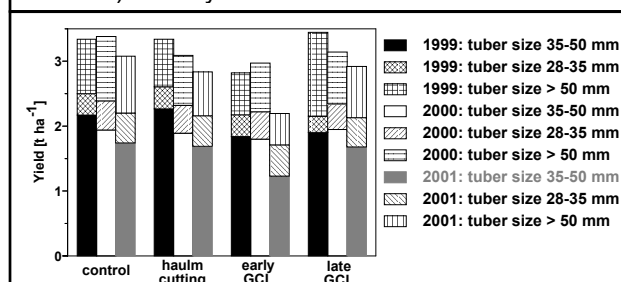


Fig. 3: Tuber yield and grading of yield with regard to year and haulm destruction